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ABSTRACT

The cost factors involved in the New Designs for the Comprehensive High School project were compared with the traditional operating costs of a comprehensive high school in the United States. The high school cost analysis was based on expenditure profiles developed by the Educational Research Service (ERS). ERS data were manipulated to derive an estimated cost per high school pupil using the 1.30 secondary/elementary ratio. Typical costs were used in the development of four different scenarios that drew from and expanded on New Designs concepts. The first three analyzed the operating cost impact of New Designs schools with an educational technology focus, partnership focus, and relational staffing focus. The fourth scenario analyzed the cost impact of combining these into an integrated focus. Equipment and material costs increased as technology use increased, but partnership and relational staffing arrangements potentially offset a significant portion of these costs. The more students took responsibility for care and cleanliness of their work spaces, the less likely were custodial and maintenance costs to increase significantly. The more the work environment was organized and operated consistent with the adult world of work, the more opportunities were created to share equipment, materials, human resources, and training activities and to contain costs. Creative partnerships involving shared resources resulted in new access opportunities for students without significant new costs. (YLB)

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LEARNING COSTS: OPERATING COST ANALYSIS FOR NEW DESIGNS FOR THE COMPREHENSIVE HIGH SCHOOL

by

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LEARNING COSTS: OPERATING COST ANALYSIS FOR NEW DESIGNS FOR THE COMPREHENSIVE HIGH SCHOOL

Introduction

This working paper examines the cost factors involved with the New Designs for the Comprehensive High school by comparing the anticipated operating costs with the traditional operating costs of a comprehensive high school in the United States. The average costs to operate a traditional comprehensive high school are used as a base for comparison because they represent the level of investment our society makes in secondary education today. Comparisons with the current level of expenditures are intended to generate discussions around tradeoffs, anticipated return-on-investments, and affordability. Conversely, use of the traditional comprehensive high school as a point of reference is not intended to imply that the current expenditure level is either adequate or excessive. Rather, the traditional high school represents a model that is familiar to most people concerned about secondary education and it represents a point of departure to consider alternatives.

The transition from a traditional comprehensive high school structure and approach to that envisioned in the New Designs for the Comprehensive High School will involve a variety of costs. These costs can be documented or estimated; however, they are not the focus of this working paper. Rather, this paper examines primarily the ongoing operational costs anticipated after the organizational transition is complete and the new designs are in place.

The discussions and analyses relative to operational costs are based on the design concepts that were developed in the series of research and synthesis papers for the New Designs for the Comprehensive High School research project. However, as the New Designs are implemented in a variety of communities and environments, the associated costs will vary. For example, transportation costs might be significantly higher in communities without access to public transportation or where the distances to be traveled to share resources and participate in partnering activities are great. Conversely, those communities where companies specializing in needed technology are located might anticipate greater partnership opportunities and lower costs than in other communities without similar resources.

No attempt has been made to estimate or account for operating cost variances resulting from local circumstances. Local committees and work groups studying the New Designs are in the best position to recognize and take into account these factors. The attention of this paper remains on the operating costs most likely to be associated with the New Designs, absent the impact of local circumstances and conditions.

The perspective from which the operating cost analyses are offered in this paper is the high school. No attempt is made to assess cost impacts on the school district or the larger community resulting from implementation of the New Designs for the Comprehensive High School. Some elements of the New Designs—including partnerships that share technology, experiential learning programs, and others—might result in lowered operating costs for the high school while potentially increasing costs elsewhere in the school district and community. These *cost shifts*, to the extent they exist, are assumed, but not analyzed and discussed in detail here. Nevertheless, in an environment where resources are shared and the search is constant for those who can perform best each necessary educational task or service, the total cost to the larger community—schools, businesses, government, and individuals—is likely to be far less than if each segment of the community was working in isolation.

The Path We Followed

The development of this paper presented two primary challenges. The first was to establish the component operational costs associated with the traditional comprehensive high school, including a model for use in comparing those costs with the New Designs for the Comprehensive High School. The second challenge was to analyze the costs associated with the operation of the New Designs and compare them to the costs of operating the traditional high school.

The search for operational costs associated with the traditional high school began with a review of an earlier study on exemplary career-oriented schools (Mitchell, Russell, & Benson, 1989). However, that study was found to be unsuitable because it did not include operating costs for the comprehensive high school and the costing method (Resource Cost Model) required a more detailed analysis of the New Designs than the information available would support.

The search continued through contacts with and referrals from Dr. Charles Benson at the University of California-Berkeley, including conversations and contacts at the OERI Center for Educational Finance at the University of Southern California and a variety of offices at the California Department of Education. While everyone agreed that information on the costs to operate a traditional high school should be collected and made available, no one was aware of such a databank of cost information.

Another thrust of this effort was to contact the Minnesota Department of Education (MDE). While the MDE did not possess data on the cost of operating a senior high school, they did provide valuable information on the ratio of expenditures for elementary versus secondary students. Their spending ratio data was used to calculate the cost of a high school education from student costs acquired from the Educational Research Service (ERS) (1991) of Arlington, Virginia. Contact with the ERS proved the most fruitful. However, their data was on a per student basis for all district expenditures. As with other resources, the cost of educating students at a particular level of instruction were not segregated from district-wide expenditures. Nonetheless, it was the ERS data that ultimately gave life to the section on operational costs for the traditional high school.

Considerable frustration remains about the absence of dependable national data in this area for use in comparisons with the New Designs. The cost associated with the operation of the traditional comprehensive high school in the United States appears to be a promising area for further research.

The second challenge, analyzing and comparing costs associated with the New Designs, appeared initially to be straight forward. However, further study uncovered several difficulties as various aspects of the New Designs were found to overlap and interrelate. In addition, the variabilities likely to emerge as the New Designs are implemented in specific communities with unique locations and environments argued against detailed, narrow conclusions.

A decision was reached to consider each of the areas of focus—educational technology, partnerships, and relational staffing—separately and conclude by integrating the three perspectives to show interplay and synergy. This decision proved very helpful in examining and explaining the cost impacts and in comparing the New Design costs to those associated with the traditional high school.

The project ultimately came together reasonably well in spite of the difficulty in locating dependable national data on the cost of operating the traditional comprehensive high school and the need to remain focused on the operational costs associated with the New Designs while recognizing probable variations in operating costs that will emerge as the New Designs are implemented locally.

This paper is divided into five major sections. The first part will present and examine cost categories and levels associated with the traditional comprehensive high school in the United States. The second section will consider the cost impact of an educational technology focus in the New Design, including equipment, maintenance and custodial, and staffing costs.

The third section will identify cost increases and decreases associated with the New Design's focus on partnerships. Capital expenditures, staffing, and transportation costs will be noted and discussed. The fourth section will present an analysis of the New Design's focus on relational staffing. The cost options and impacts of a relational staffing approach will be identified and examined. The final section of this paper will analyze the impact of the integration of the three areas of technology, partnerships, and relational staffing on financial resources. The impact of these three aspects of New Designs for the Comprehensive High School will be highlighted, discussed, and assessed.

High School Cost Analysis

Determining the cost of operating a *typical* high school has proven to be a difficult task. While a wealth of data exists relating to educational costs on a district basis, a breakdown by level of instruction is not available. The Education Research Service (ERS) indicated that they have suggested repeatedly that the United States Department of Education conduct research on the costs of providing an educational program for a particular school building or specified grades. A major obstacle in assembling such data relates to the lack of comparability in how districts account for various costs and how those costs are assigned within the organization. This lack of data and its importance was noted by Allen Odden who reported that "expanding information in this arena is another research imperative for the 1990s" (Odden & Picus, p. 277).

Analysis is based on the average cost of educating each student throughout an entire school district. This data does not distinguish between elementary or secondary students. Therefore, the cost of a high school education is inferred from this data based on spending ratios. It is common for states to fund education on a per student basis by weighting various students differently based on the anticipated cost of education at various levels. These education formulas provide funding ratios ranging from 1.15 to 1.70 for secondary versus elementary education (Odden & Picus, p. 235-237).

Funding ratios are intended to recognize and approximate the difference in the cost of educating a secondary student versus an elementary student. In 1991 the Minnesota Department of Education attempted to reconstruct the spending ratios using expenses reported by Districts for the 1989-90 fiscal year (7/1/89 - 6/30/90). These expenses were reported on a modified accrual basis of accounting. The analysis indicated spending ratios ranging from 1.53 to 1.31 depending on the district's K-12 enrollment. Broken down by the district size, the ratios are shown in Table K.1 (Minnesota Department of Education).

Table K.1
Spending Ratios (Elementary vs. Secondary) by District Size

District Enrollment	Spending Ratio (Elementary vs. Secondary)
0-300 Students	1.51
300-600 Students	1.50
600-900 Students	1.42
900-1200 Students	1.54
1200 & More Students	1.31
Average	1.38

A ratio of 1.30 appears to be a reasonable ratio to use for determining the existing standard of expenditure for elementary versus secondary education. It is consistent with nationwide funding ratios and, in Minnesota, reflects a spending ratio for the largest schools. Furthermore, for the purpose of this study, that is, the cost of operating a comprehensive high school, it seems appropriate to eliminate school districts with fewer than 1,200 students. While a spending ratio of 1.3 can be substantiated on the basis of national spending patterns and funding formulas, ratios that favor secondary students are often refuted from an educational productivity standpoint. Nonetheless, the use of ratios as noted appears justifiable when evaluating existing data.

The analysis that follows is based on expenditure profiles developed by the Educational Research Service. The categories and descriptions are taken verbatim from *Local Budget Profiles 1990-91* published by ERS (ERS, p. 1). The profile is a compilation of budget data submitted by member districts for expenditures on a district-wide basis. These categories, defined below, are used in each of the tables to compare anticipated costs with that of a traditional high school. The ERS school budget profile provides "a consistent and reliable means for comparing local school budgets throughout the nation," (Robinson & Protheroe, p. 18). The descriptions for the school budget profile categories are shown in the ERS data presented here.

Names and Descriptions of Typical Cost Categories Used by the Educational Research Service (ERS)

ERS Budget Analysis Categories	Description Provided by ERS
Total Instructional Services	**Included:** Total of expenditures for Classroom Instruction, Books and Materials, Auxiliary Instructional Services, Improvement and Development of Instruction, Special Education, and Other Instructional Services (e.g., services contracted to outside agencies, such as regional service agencies).
Classroom Instruction	**Included**: K-12 teachers, paraprofessionals, and clerical personnel working with teachers in the classroom.
Special Education	**Included**: Teachers, paraprofessionals, and clerical personnel providing services to handicapped students; also includes services contracted to outside agencies or private schools to which district sends special education students.
Books and Materials	**Included**: Textbooks, library books, audiovisuals, and instructional materials.
Auxiliary Instructional Services	**Included**: Counselors and librarians and their support staffs; testing services.
Improvement and Development of Instruction	**Included**: Curriculum development; instructional supervision; inservice and professional development of staff services.
School Site Leadership	**Included**: Offices of principals and assistant principals.
Total Student Services	**Included**: Total of expenditures for Health and Attendance, Transportation, Food Services (net cost), Student Activities (net cost), and Other Student Services.
Health and Attendance	**Included**: Physical and mental health staff related paraprofessionals, and clerical staff and materials.

Transportation	**Included**: Staff, maintenance and operation of equipment; fuel, and contracts for transporting public school pupils even if a separate transportation fund is maintained. **Excluded**: Expenditures related to the transporting of non-public school pupils.
Food Service	**Included**: Net cost to district of operating food service program. **Excluded**: Expenditures offset by income from cash sales and state and/or federal subsidies.
Student Activities	**Included**: Net cost to district. **Excluded**: Expenditures offset gate receipts, activity fees.
Board of Education Services	**Included**: Board member salaries and expenses; election services; legal services; census; tax assessment/collection services; and similar board services.
Executive Administration	**Included**: Offices of the superintendent, deputy, assistant, and area superintendents; include also employee relations and negotiation services; state and federal relations services; and related services not listed elsewhere. **Excluded**: Services (listed elsewhere) for planning, research, and evaluation; maintenance and operations; statistics; data processing; business; and school site leadership.
Central and Business Services	**Included**: Fiscal services (payroll, budgeting, accounting, internal auditing); facilities acquisition and construction services; central office support services (staff personnel, public information, planning, research, evaluation, statistics, data processing); and similar services not included elsewhere.
Maintenance and Operations	**Included**: Staff, equipment, and supplies for the care, upkeep, and operation of buildings, grounds, security, and other services. **Excluded**: Expenditures such as retirement contributions and fringe benefits that are prorated in items above; also Excluded are expenditures for community services, recreation services, and junior colleges.
Environmental Conditioning	**Included**: Fuel for heating and cooling plus all utilities except telephone.
Other Current Expenditures	**Included**: All other current expenditures not reported elsewhere (e.g., telephone charges if these are all budgeted to one district-wide account), fire insurance, professional liability insurance, short-term interest). **Excluded**: Expenditures such as retirement contributions and fringe benefits that are prorated in items above; also Excluded are expenditures for community services, recreation services, and junior colleges.

Capital Outlay	**Included**: Expenditures from any special capital outlay accounts for new and replacement buildings, vehicles, and other major equipment items. **Excluded**: Expenditures for capital outlay purchases already reported above.
Debt Retirement	**Included**: Payment on principal; payments to school-housing authorities.
Interest Paid on Debt	**Included**: Interest paid on long-term debts only.
Total Budgeted	**Included**: Total of expenditures for total current expenditures budget plus non-current expenditures items. Portions of percentage in excess of 100.00% represents expenditures for capital outlay, debt retirement, and interest paid on debt.

Note: For all budget categories included under Total Current Expenditures, respondents were asked to include all salaries, prorated employer payments for retirement, social security (FICA), fringe benefits as well as, materials contracted services to other agencies, and other current expenditures related to each of the functions. Expenditures for all current expenditure funds (e.g., operating, federal projects, transportation) were requested.

Determining the Typical Cost Basis

The ERS data has been manipulated by the authors to derive an estimated cost per high school pupil using the 1.30 secondary/elementary ratio described earlier. To achieve this ratio, an algebraic formula was developed for the purpose of converting the ERS pupil data to a cost per high school pupil. For this purpose, an even distribution of students across thirteen grades (kindergarten through twelfth grade) was assumed. This yielded a factor of 1.18, which was applied to the ERS student cost data to calculate the relative cost of each high school student. This step was necessary to convert the average pupil cost data provided by ERS to an average cost per high school pupil at the 1.3 ratio.

Table K.2
Expenditures Per Pupil, 1990-91

ERS Budget Analysis[a] Categories	Per High School Per Pupil[a] Expenditure	Pupil Expenditure @1.3 Ratio[b]
Total Current Expenditures	$ 5017	$ 5920
Total Instructional Services	3392	4002
• Classroom Instruction	2491	2939
• Special Education	417	492
• Books and Materials	140	165
• Auxiliary Instructional Services	207	244
• Improvement and Development of Instruction	70	83
School Site Leadership	271	320
Total Student Services	392	463
• Health and Attendance	80	94
• Transportation	234	276
• Food Service	15	18
• Student Activities	51	60
Board of Education Services	28	33
Executive Administration	94	111
Central and Business Services	121	143
Maintenance and Operations	417	492
Environmental Conditioning	135	159
Other Current Expenditures	165	195
Capital Outlay	241	284
Debt Retirement	149	176
Interest Paid on Debt	102	120
Total Budgeted Expenditures	5511	6503

NOTE. The per pupil income and expenditure data shown in the table were computed by calculating the means of dollar figures for each of the reporting districts, and the percents shown were computed by calculating the means of the percent figures. Therefore, the percents may differ from those calculated from per pupil income and expenditure figures shown in this table. Also, each total in this table was calculated directly from data supplied by the reporting districts, not by adding the averages listed for the applicable component categories; therefore, the averages for the components do not necessarily add up to match the totals listed.

[a] Source: Educational Research Service, 1991 *Local School Budget Profiles*, Arlington, VA.
[b] ERS Data manipulated by author.

The typical cost basis shown in Table K.2 will be repeated in Tables K.3, K.4, K.5, K.6, and K.7. The typical costs developed above were used in the development of four different scenarios that draw from and expand the New Design concepts. The first three scenarios analyze the operating cost impact of New Designs school with (a) an educational technology focus, (b) a partnership focus, and (c) a relational staffing focus. The fourth scenario analyzes the cost impact of combining the first three into an integrated focus.

Educational Technology Focus

An important aspect for the New Designs for the Comprehensive High School is the utilization of educational technology to create learning environments that are authentic, closely resembling the settings in which students will work as adults. In this context, educational technology represents the tools to access needed information and knowledge and to do productive work.

The term, *educational technology*, as used in this paper, is consistent with the definition offered by Damyanovich, Copa, and Pease (1992) in the earlier research and synthesis paper entitled *Learning Technology: Enhancing Learning in New Designs for the Comprehensive High School:*. Educational technology refers to the new and emerging information technologies that connect people and institutions and provide easy access to multiple sources and forms of information at disparate locations making learning accessible, flexible and portable (i.e., computers, calculators, electronic networks, telecommunications, databases, graphics and publishing software, video discs, CD-Rom, interactive and satellite television).

Equipment Costs

Equipment to support a technology focus in the New Designs will require far more than currently is invested in the traditional high school. Beyond initial costs to purchase technology, additional financial resources will be required to replace worn-out and outdated equipment, and to incorporate new technologies as they are available.

Several options exist for dealing with the intensive technology investment beyond the direct allocation of financial resources. Partnerships might be explored with other

educational and training institutions, including universities, colleges, technical institutions, and training centers where the identified technology may exist, but is not utilized fully. A school, for instance, may utilize another organizations computer capacity during non-peak usage periods. Another potential option is to secure funding from private sources such as local businesses and foundations. Further, partnerships with businesses might be developed in which businesses provide the necessary resources to purchase technology in exchange for access to the technology and staff training during non-student use times. Finally, students might be allowed access to certain technology located in local businesses at times when the technology is not needed by employees. This approach is particularly attractive in areas of technology that are highly specialized and where hardware and software are expensive. Best of all, both parties to these arrangements benefit from their involvement. Obviously, several of these alternatives drastically reduce the cost of access to new and appropriate technology to a point where the cost is within the range of reasonable affordability.

Software and Database Access

The usability and impact of technology is heavily dependent on the availability of appropriate software and access to a wide range of databases to assist in a student driven educational program. Costs related to the purchase and updating of software and access to multiple external databases will exceed current costs significantly. However, there will be some offsetting of current costs as dependence on printed materials such as textbooks is diminished. In addition, the ability to keep software and databases current offers a positive tradeoff to textbook replacement.

Some software and databases may be available through partnerships with other organizations and institutions such as technical schools and universities. However, it is anticipated that most of the increased costs will be borne by the resources of the high school or from partners willing to make necessary financial resources available.

Custodial and Maintenance Costs

The nature and complexity of today's technologies makes a program of preventive and routine maintenance of equipment a requirement. The costs to support these services will be higher than current levels. Incidentally, the level of equipment maintenance in most school districts today is below what is acceptable in other environments resulting from the

reallocation of funds into other areas such as salaries, instructional supplies, and emergency repairs. Consequently, the increase in resources required to provide a reasonable preventive and routine equipment maintenance program will be even larger than would be the case if current supports were adequate.

Custodial costs might be expected to rise also as educational space is divided into smaller work and meeting areas and as more furniture and equipment are present. However, the increase is not expected to be more than moderate.

An alternative that might be considered in light of efforts to provide an *ownership curriculum* to students is that of expecting students to participate in the care and cleanliness of their own work space. This practice would reduce any increase in current custodial costs and if the practice was extended into common areas, the custodial costs even might be held at current levels.

Staffing

The implications of a heavy investment in technology on costs related to staffing are a challenge to determine because much depends on the type and level of sophistication of the technology. Obviously, support will be required initially and on an ongoing basis to develop and maintain the necessary knowledge and skills among staff members to facilitate maximum utilization. These training and support needs often are overlooked or underestimated when technology purchases are planned. Yet, such an oversight is likely to result in diminished returns from an investment in technology.

In addition, special skills and roles will be required of some staff to support and coordinate change through partnerships related to technology. Others will need additional skills to support the technology itself—making minor adjustments and repairs and troubleshooting minor problems. Finally, some staff members will have to be looking ahead to new developments in technology, assessing potential for application in the school, and exploring ways to making technology available and accessible (Damyanovich, Copa, & Pease, 1992). Not all the staff who fill these special roles related to technology will have to be full-time nor will all of them have to be licensed teaching staff. Some options are available for specially-trained paraprofessional and technical staff to perform these functions.

Supplies and Materials

A moderate increase in supplies and materials is anticipated to support additional technology, including computer disks, video and audio tapes, cameras, and film. However, as dependence upon traditional materials such as textbooks and workbooks is lessened, some material cost increases will be offset. Therefore, the added costs are projected to be moderate.

Table K.3
Expenditures Per High School Student—
Traditional vs. Educational Technology Focus

ERS Budget Category	Traditional Focus Per High School Pupil Expenditure @ 1.3 Ratio	Technology Focus Anticipated Change
Total Current Expenditures	$ 5920	+
Total Instructional Services	4002	+
• Classroom Instruction	2939	+
• Special Education	492	0
• Books and Materials	165	0
• Auxiliary Instructional Services	244	+
• Improvement and Development of Instruction	83	++
School Site Leadership	320	0
Total Student Services	463	0
• Health and Attendance	94	0
• Transportation	276	0
• Food Service	18	0
• Student Activities	60	0
Board of Education Services	33	0
Executive Administration	111	0
Central and Business Services	143	0
Maintenance and Operations	492	+
Environmental Conditioning	159	+
Other Current Expenditures	195	+
Capital Outlay	284	++
Debt Retirement	176	0
Interest Paid on Debt	120	0

Note. ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
- Moderate decrease of -5% to -20%
– Substantial decrease of more than -20%

Partnership Focus

A discussion of partnerships in the New Designs for the Comprehensive High School is presented in the earlier working paper entitled *Learning Partnerships: Lessons from Research Literature and Current Practice in Secondary Education*, by Karls, Pease, Copa, Beck, and Pearce (1992). This section offers perspectives on the cost impacts related to the integration of partnerships as envisioned in the New Designs.

The impact on costs resulting from a partnership focus will vary considerably as the nature, level, and goals of multiple partnerships emerge. However, the underlying partnership premises of shared resources, expertise, and perspectives are that they will lead to more efficient use of the human and financial capital available within the community and, in the larger context, will result in reduced costs. Nevertheless, some variation of impact is likely to occur across cost categories.

Facilities and Equipment

The capital cost areas of facilities and equipment are likely to be affected positively by significant, ongoing partnerships with businesses, the general community, and post-secondary institutions. A prime example is the use of businesses as cooperative working/learning stations. The business benefits by acquiring motivated students and training assistance from the school. The school benefits by providing a meaningful education without making the additional investment in facilities and equipment. And the student benefits by receiving a more meaningful and better leveraged education. Partnerships might take the form of co-location of services, shared access to specialized equipment, and joint use of facilities. If students are provided access to sophisticated technologies located in businesses, post secondary training institutions, or other nearby public or private secondary schools, the high school can avoid bearing the total cost to purchase and maintain equipment that may not be cost effective in terms of use levels and impact on the general student population. Businesses, conversely, might accommodate student access to technology if the school is willing to share costs for maintenance and upkeep of equipment. From the perspective of high school facilities, needed space also is freed to be used for other, often more flexible, purposes. In some cases, significant reductions in capital and maintenance costs might be realized through the sharing of facilities and equipment and attendant operational costs.

Staffing

Staff related costs are likely to be impacted in at least four major areas related to partnerships. First, additional training will be required to prepare and support staff to focus successfully in an environment that is heavily dependent on partnerships. Initial training costs will be highest, but moderate increases over traditional costs are expected to be ongoing.

Second, staffing costs will be reduced in areas where partners with special expertise are utilized to provide services such as student instruction, internships, and staff training. This impact will be most obvious when external partner expertise is utilized to avoid hiring permanent, full-time staff for highly specialized services.

Third, co-location of community services in the high school and partnerships with health and social service organizations might be expected to change and reduce some current responsibilities in pupil support service areas such as nursing, counseling, social work, and psychology. Increasingly, the role of school pupil support staff will be the identification of need and referral to appropriate services. This shift is likely to reduce moderately the number of staff required in pupil support roles.

Fourth, moderate increases in staffing costs will result from services needed to identify, orient, supervise, and manage volunteer and partnership human resources. The increase in cost is anticipated since these services do not exist in most traditional high schools today and where the services are present, they rarely are at the level envisioned in the New Designs for the Comprehensive High School. Conversely, these increases might be offset, partially or completely, by school level administrative role changes from traditional principals to community coordinators with more direct responsibility to support student learning.

Transportation

A commitment to share equipment, facilities, and services (e.g., training, mentorships, internships) will require student transportation to multiple locations outside the high school facility. This commitment to transportation exceeds the level and flexibility of transportation services found in most traditional high schools today, and will result in significant increases in transportation costs.

One strategy to manage this demand for resources is to purchase or lease several vans to transport small groups of students, utilizing properly licensed staff members or carefully screened and insured volunteers as drivers. Another similar strategy is to include in the partnership access to carpool vans during non-use hours where the business partner has such a program in place. Specific costs to implement these strategies will vary by location and circumstance, but in almost all cases, the cost will be lower than more traditional school transportation options.

Table K.4
Expenditures Per High School Student—
Traditional vs. Partnership Focus

ERS Budget Category	Traditional Focus Per High School Pupil Expenditure @ 1.3 Ratio	Partnership Focus Anticipated Change
Total Current Expenditures	$ 5920	0
Total Instructional Services	4002	0
• Classroom Instruction	2939	0
• Special Education	492	0
• Books and Materials	165	0
• Auxiliary Instructional Services	244	-
• Improvement and Development of Instruction	83	+
School Site Leadership	320	+
Total Student Services	463	-
• Health and Attendance	94	-
• Transportation	276	+
• Food Service	18	0
• Student Activities	60	-
Board of Education Services	33	0
Executive Administration	111	0
Central and Business Services	143	0
Maintenance and Operations	492	0
Environmental Conditioning	159	0
Other Current Expenditures	195	0
Capital Outlay	284	0
Debt Retirement	176	0
Interest Paid on Debt	120	0

Note. ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
- Moderate decrease of -5% to -20%
– Substantial decrease of more than -20%

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• Food Service	18	0
• Student Activities	60	-
Board of Education Services	33	0
Executive Administration	111	0
Central and Business Services	143	0
Maintenance and Operations	492	0
Environmental Conditioning	159	0
Other Current Expenditures	195	0
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Debt Retirement	176	0
Interest Paid on Debt	120	0

Note. ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
- Moderate decrease of -5% to -20%
– Substantial decrease of more than -20%

Relational Staffing Focus

A way to think about a relational staffing model is to use the metaphor of a family. While parents might have primary responsibility for the care, guidance, and education of the children, aunts, uncles, grandparents, older cousins and others within the community often will play supporting roles in the upbringing of the children. The organization of the New Design for the Comprehensive High School is particularly adaptive to relational staffing or a *family* model because of the small unit structure within larger neighborhoods and communities of learners.

Older cousins teach a child how to ride a bicycle, a neighbor gives piano lessons and a person from across town coaches the soccer team. While the parent has direct responsibility for helping the child decide learning activities in which to participate and will coordinate schedules and even car pool to the activities, others in the family, neighborhood, and community play specialized contributing roles.

The same is true in a relational staffing approach. Typically, some staff members will assume greater direct responsibility for the learning activities of students and will coordinate the activities of other staff members whose contributions are necessary to support a full range of learning opportunities. Additionally, this approach lessens dependence on middle level administrative services such as provided by department heads and associate principals, resulting in reduced administrative costs.

Two primary goals support the concept of relational staffing: (a) achieving an optimal match between the resources and talents required of staff members and the responsibilities of the positions for which they are hired; and, (b) purchasing the maximum amount of human resources with the financial resources available. Achieving an optimal match between the human resources staff members offer and what is required of program positions allows greater flexibility in staffing patterns and in the services offered students.

Staffing Costs

If the level of adult support available to students in the traditional high school were held constant in the New Designs, staffing costs would be reduced moderately. However, if the resources available for staffing in the traditional high school were held constant, an increase in adult support could be supported using a relational staffing approach.

Staff Development and Training

Some increase in staff development and training costs should be anticipated as expectations for functioning in a team environment are increased and as staff are hired to fill multiple roles in the unit or *family*. These cost increases might be offset partially through partnerships with businesses and organizations in the community that utilize a team approach to accomplish their work and, consequently, have some similar training needs. The relational staffing focus necessitates a comprehensive approach to staff development like that described by Lum, Copa, and Pease (1992) as a "shared responsibility of all members of the staff working together in the combined roles of teacher/learner" (p. 34). Other cost dimensions are not expected to be affected by a relational staffing strategy.

Table K.5
Expenditures Per High School Student–Traditional vs. Relational Staffing Focus

ERS Budget Category	Traditional Focus Per High School Pupil Expenditure @ 1.3 Ratio	Relational Staffing Focus Anticipated Change
Total Current Expenditures	$ 5920	0
Total Instructional Services	4002	0
• Classroom Instruction	2939	0
• Special Education	492	0
• Books and Materials	165	0
• Auxiliary Instructional Services	244	-
• Improvement an Development of Instruction	83	+
School Site Leadership	320	-
Total Student Services	463	0
• Health and Attendance	94	-
• Transportation	276	0
• Food Service	18	0
• Student Activities	60	-
Board of Education Services	33	0
Executive Administration	111	0
Central and Business Services	143	0
Maintenance and Operations	492	0
Environmental Conditioning	159	0
Other Current Expenditures	195	0
Capital Outlay	284	0
Debt Retirement	176	0
Interest Paid on Debt	120	0

Note. ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
- Moderate decrease of -5% to -20%
– Substantial decrease of more than -20%

Integrated Focus

The integration of technology, partnerships, and relational staffing offers a synergistic effect that exceeds the impact of the three dimensions when considered separately. In relation to the typical costs, the integrated focus cost impact is shown in Table K.6. However, the full impact of the New Designs for the Comprehensive High School becomes evident when viewed from an integrated perspective. The impact is best understood in relation to all of the previous cost analyses. Table K.7 is constructed to show a summary of the previous three tables along side of the cost impacts of the integrated focus.

Table K.6
Expenditures Per High School Student—Traditional vs. Integrated Focus

ERS Budget Category	Traditional Focus Per High School Pupil Expenditure @ 1.3 Ratio	Integrated Focus Anticipated Change
Total Current Expenditures	$ 5920	0
Total Instructional Services	4002	0
• Classroom Instruction	2939	0
• Special Education	492	0
• Books and Materials	165	0
• Auxiliary Instructional Services	244	0
• Improvement an Development of Instruction	83	+
School Site Leadership	320	0
Total Student Services	463	0
• Health and Attendance	94	0
• Transportation	276	0
• Food Service	18	0
• Student Activities	60	0
Board of Education Services	33	0
Executive Administration	111	0
Central and Business Services	143	0
Maintenance and Operations	492	0
Environmental Conditioning	159	0
Other Current Expenditures	195	0
Capital Outlay	284	+
Debt Retirement	176	0
Interest Paid on Debt	120	0

Note. ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
- Moderate decrease of -5% to -20%
– Substantial decrease of more than -20%

Table K.7
Summary of Expenditures Per High School Student for Four Different Emphases

ERS Budget Category	Traditional Focus Per High School Pupil Expenditure @ 1.3 Ratio	Anticipated Change: Technology Focus	Partnership Focus	Relational Staffing Focus	Integrated Focus
Total Current Expenditures	$ 5920	+	0	0	0
Total Instructional Services	4002	+	0	0	0
• Classroom Instruction	2939	+	0	0	0
• Special Education	492	0	0	0	0
• Books and Materials	165	0	0	0	0
• Auxiliary Instructional Services	244	+	-	-	0
• Improvement and Development of Instruction	83	++	+	+	+
School Site Leadership	320	0	+	-	0
Total Student Services	463	0	-	0	0
• Health and Attendance	94	0	-	-	0
• Transportation	276	0	+	0	0
• Food Service	18	0	0	0	0
• Student Activities	60	0	-	-	0
Board of Education Services	33	0	0	0	0
Executive Administration	111	0	0	0	0
Central and Business Services	143	0	0	0	0
Maintenance and Operations	492	+	0	0	0
Environmental Conditioning	159	+	0	0	0
Other Current Expenditures	195	+	0	0	0
Capital Outlay	284	++	0	0	+
Debt Retirement	176	0	0	0	0
Interest Paid on Debt	120	0	0	0	0

Note. ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
- Moderate decrease of -5% to -20%
-- Substantial decrease of more than -20%

Note: Operating cost changes have been analyzed from the perspective of the high school only. No attempt has been made to document and report potential "cost shifts" to other segments of the community.

Equipment

The increased cost of purchasing and utilizing state-of-the-art technology equipment is far less when partnerships with other educational and training institutions or local businesses are utilized. Shared use of technology located off-site, and purchased to serve the needs of other organizations also can meet the needs of high school students if goals are clear and creativity and flexibility are present in the partnership. In fact, sharing of technology can benefit other organizational partners who own and are the primary users of technology when schools are willing to have flexible access to equipment during non-peak times and share in maintenance and operational costs.

Software and Database Access

Similar to equipment costs, software and database access costs can be contained by finding partners with similar needs and with access to appropriate software and databases. Partnerships of this type might be particularly attractive to educational and training institutions who are in a position to serve high school students after graduation and who see an advantage in familiarizing potential students with their programs and services before high school graduation.

Custodial and Maintenance

As mentioned earlier, increased investment in technology will result in increased maintenance and custodial costs; however, a portion of the increase can be controlled by innovative partnerships that locate equipment off-site and by involving students more directly in the care and cleaning of personal and common work areas.

Staffing

The integration of technology, partnerships, and relational staffing has its greatest impact in this area. Support of technology requires a variety of skills and positions not present in the traditional program, including technical support and troubleshooting, monitoring and experimenting with new technology, and supporting and managing the implementation of new technologies that enhance the educational program. The nature of many of these new roles is such that some expectations of the traditional classroom teacher, such as being the ultimate source of knowledge and determiner of a uniform instructional path, will no longer be held. Conversely, other skills as noted above will be required. This phenomenon combined with a staffing philosophy grounded in serving the needs of

learners—adolescents and adult—and increased interpersonal support argues strongly for multiple staffing roles, each contributing to the overall goals of quality, flexible educational opportunities for learners.

In summary, the approach described above will require an increase in the staffing required to offer the services to which the New Designs is committed; however, the use of multiple partnerships and relational staffing could reduce the impact to a negligible level.

Transportation

The need to transport students from the primary learning environment of the high school to a variety of locations to access technology, participate in experiential learning environments, and a variety of other activities will represent an increase in transportation costs over what is present in the traditional high school setting. However, the lessening of technology cost increases through partnerships and relational utilization of staff members with a variety of expertise and talent will more than offset transportation cost increases. In addition, options discussed previously for minimizing transportation costs would reduce further any increase.

Summary

The interplay of the three primary areas of focus—educational technology, partnerships, and relational staffing—has a dynamic effect on the opportunities and costs associated with the New Designs for the Comprehensive High School. This paper has considered each perspective individually and concluded with the integration of all three focus areas. Several important factors should receive attention by design groups that are contemplating the comparative costs associated with operating a comprehensive high school according to the New Designs. These are:

- Operational costs associated with the traditional high school, although useful points of reference for comparison, are not necessarily adequate or appropriate to accomplish the mission of high schools.

- Operational costs associated with implementation of the New Designs will vary in response to local circumstances and conditions. This variability should be taken into account by local planning committees.

- Equipment and material costs will increase as technology utilization increases, but partnerships and relational staffing arrangements potentially can offset a significant portion of the costs.

- The more students take responsibility for the care and cleanliness of their work spaces, the less likely are custodial and maintenance costs to increase significantly.

- The more the work environment of the high school is organized and operated consistent with the adult world of work, the more opportunities are created to share equipment, materials, human resources, training activities, and to contain costs.

- Increases in partnership activities are likely to be accompanied by increased transportation needs.

- A relational staffing approach based on a *family* metaphor offers a variety of possibilities to utilize special expertise and multiple roles in a flexible response to student learning needs without increasing costs significantly.
- Creative partnerships involving shared equipment, facilities, and human resources can result in significant new access opportunities to students without significant new costs to schools and their partners.

Questions to Consider

In addition to the questions associated with the assumptions and limitations of this operating cost analysis, and those that concern the absence of complete information about the operating costs associated with the typical comprehensive high school, the Design Group raised other significant issues for further discussion. These issues are likely to surface as local design teams take-on the redesign of the comprehensive high school.

- How much support and orientation will students coming from a traditional middle school or junior high school require for success in the New Designs High School?

- To what extent will technology be made available to all students outside of the school environment? Will all students have access to technology at home?

- What will be the impact of the New Designs for the Comprehensive High School on special needs students?

- If success is achieved at the point where students move on to new learning, how much might built-in course redundancy be reduced? And, what would be the financial impact?

- What will be the status of co-curricular activities?

- To what extent will students be responsible for maintaining the school community (i.e., custodial services, tutoring other students, school governance)?

- How will transition from high school to adult roles in society be supported?

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